THE COURSE OF AN INTENTIONAL POISONING

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It has been known for over fifty years that the primary symptoms of *Amanita muscaria* poisoning (disorientation, delirium, deep sleep) are not those produced by pure muscarine (sweating, salivation, tear formation, decreased heart rate). Major toxins of *A. muscaria* which closely approximate the symptoms of poisoning by the mushroom were isolated fifteen years ago in Switzerland and then, independently, in England and Japan. Pharmacological use of major toxins, ibotenic acid and muscimol, have been patented in Belgium, Switzerland and Japan. Curiously there is even a Japanese patent for using ibotenic acid as a flavor enhancer at low levels -- like m.s.g.! Chemical modification of muscimol has led to a new synthetic pesticide currently undergoing testing in Japan -- so maybe there is something to the fly-killing properties of *A. muscaria* after all.

Many books in mycology continue to print the erroneous information that *A. muscaria* poisoning is caused by muscarine. Most recently a 1974 pamphlet of the U.S. Government's Consumer Product Safety Commission containing this misinformation has been trought to my attention. Fortunately Government credibility is restored in the Department of Agriculture's forthcoming publication on poisonous mushrooms.

The following account of an intentional ibotenic acid ingestion may help to emphasize the similarity between ibotenic acid and *A. muscaria* poisoning and the dissimilarity of muscarine poisoning to the two.

In connection with a study of the mode of action of ibotenic acid in poisoning cases, in April 1975, I drank 93 mg (1/300 oz.) of crystalline ibotenic acid dissolved in a cup of cold water at ten o'clock in the morning. Ibotenic acid has an unusual aftertaste which persists for a half an hour to an hour and may be related to its use as a flavor enhancer in much smaller doses. There were no immediate effects other than the taste sensation. My experience, based on three separate occasions is that symptom onset comes after 45 minutes to 1½ hour as described for *A. muscaria* poisoning, but that the pronounced effects are not attained until 2-3 hours by which time most of the ibotenic acid ingested has appeared in the urine.

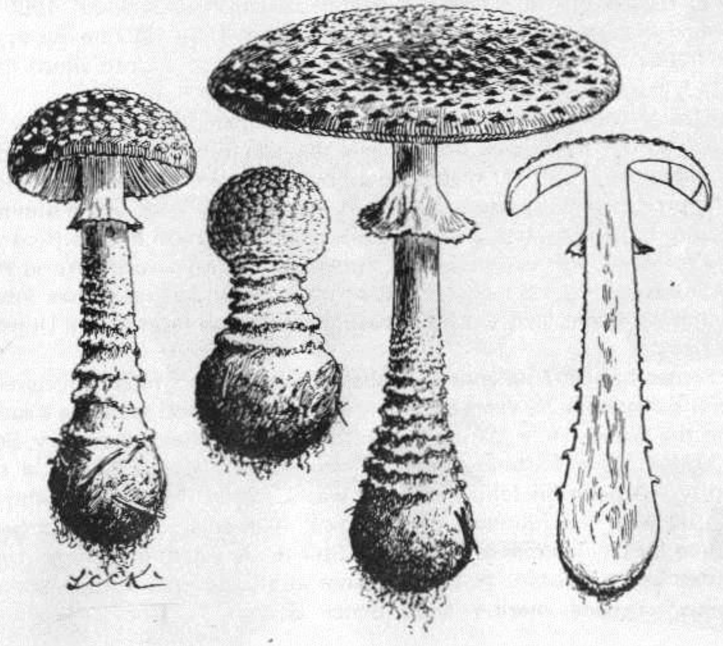
At 11:30 I still felt normal except that I had a slight tendency to wobble in walking. Unsteadiness continued to increase until by one o'clock I felt that any sudden movement might cause my head to roll off my shoulders. By 1:30 I began noting the feeling of pressure at the base of my skull. I had a feeling of being pressed down by a great weight distributed uniformly over my body and a feeling of foreshortening of my body. By this time my penmanship had deteriorated noticeably, but thought processes and speech articulation were unaffected. About two o'clock muscular twitches began, first in the fingers then in the legs. Very mild visual spasms soon followed, and my field of vision narrowed. The field of vision began to rotate slowly and sometimes to slide right, left, up or down. At no time did I hallucinate. At four o'clock I was able to read only laboriously since each word on the printed page was moving about aimlessly.

This period dominated by ever-increasing disequilibrium suddenly terminated in a deep but short sleep of about twenty minutes duration. On awaking I threw up briefly and immediately sank back into heavy, drugged sleep from which I was aroused about an hour later at five o'clock by the telephone. With the greatest effort I struggled to the phone against the great weight pressing me down and against the urge to lie down on the floor and sleep. I was able to talk briefly on the phone, but then fell asleep again until seven when I stirred briefly, feeling somewhat cleared. At eight I woke up for good. Dizziness gradually disappeared, and all sensations were normal by 9:30 in the evening.

The symptoms I have described are those of a heavy intoxication. A dose as low as 53 mg is still readily detectable, the disequilibrium lasting from the second through the eighth hour. Sleep is then only a light dozing for an hour and no vomiting occurs.

Though the intoxication can be compared to alcoholic intoxication in its effect on equilibrium, it differs in two very striking points. Ibotenic acid is cleared from the body before major symptoms of intoxication come on Alcohol, on the other hand, is present in the body during intoxication, and its presence is frequently used in the legal definition of alcoholic intoxication. The other difference is that ibotenic acid has relatively little effect on speech articulation and intellectual processes while alcohol greatly degrades both.

Ed. Dr. Chilton is Professor of Chemistry at the University of Washington and a recognized authority on fungal poisons. This presumably very dangerous experimentation cannot be encouraged, but, in the spirit of Charles McIlvaine "the man who ate mushrooms" and our namesake, is offered to the readers of *McIlvainea*. Dr. Chilton reported this experiment at a recent meeting of the Puget Sound Mycological Society and his findings are published here for the first time.



From The Mushroom Handbook, by L. C. C. Krieger, Dover Publications, Inc.